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Zeiler

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[54] **EXPANDABLE RIB STORAGE POUCH**

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[73] Assignee: **NCR Corporation**, Dayton, Ohio

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[51] **Int. Cl.**[7] **B65D 33/02**

[52] **U.S. Cl.** **383/119**; 206/215; 229/67.1; 229/67.4; 229/120.15; 383/38; 383/171; 383/104

[58] **Field of Search** 229/199, 120.08, 229/120.15, 67.4, 120.13, 67.1; 383/119, 121, 38, 40, 104; 206/193, 170, 171, 174, 175, 215; D9/305, 306, 346

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Attorney, Agent, or Firm—Francis L. Conte

[57] **ABSTRACT**

An expandable storage pouch includes four panels disposed integrally side by side in turn, and a plurality of hinges disposed in a row along a bottom end of a first one of the panels. Each hinge includes a proximal end joined to the first panel, an intermediate rib joined to the proximal end, and a distal end joined to the rib. The rib is severed from the first panel to permit expansion of the pouch, and rigidly separates the first panel from an opposite second panel.

20 Claims, 7 Drawing Sheets

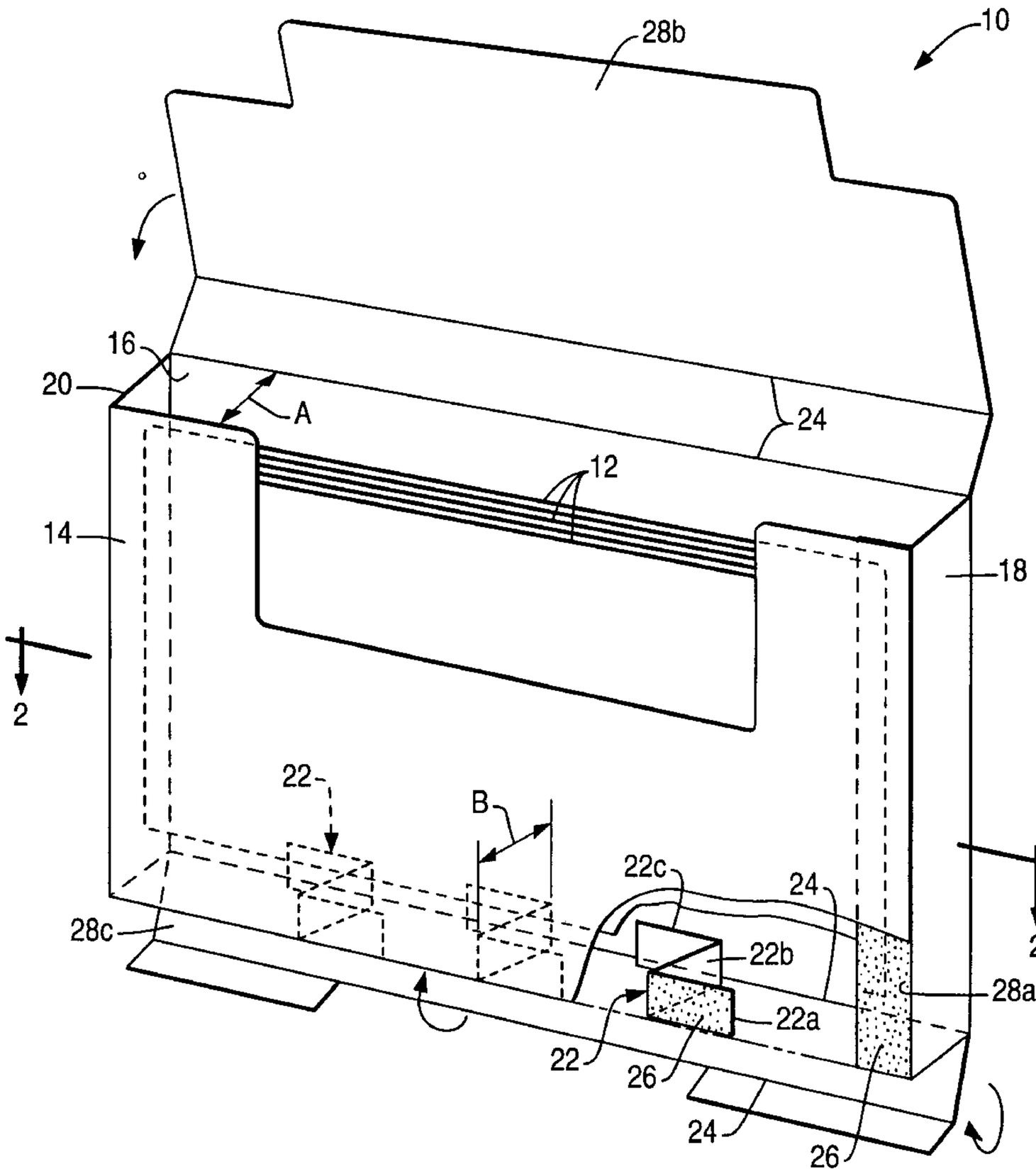
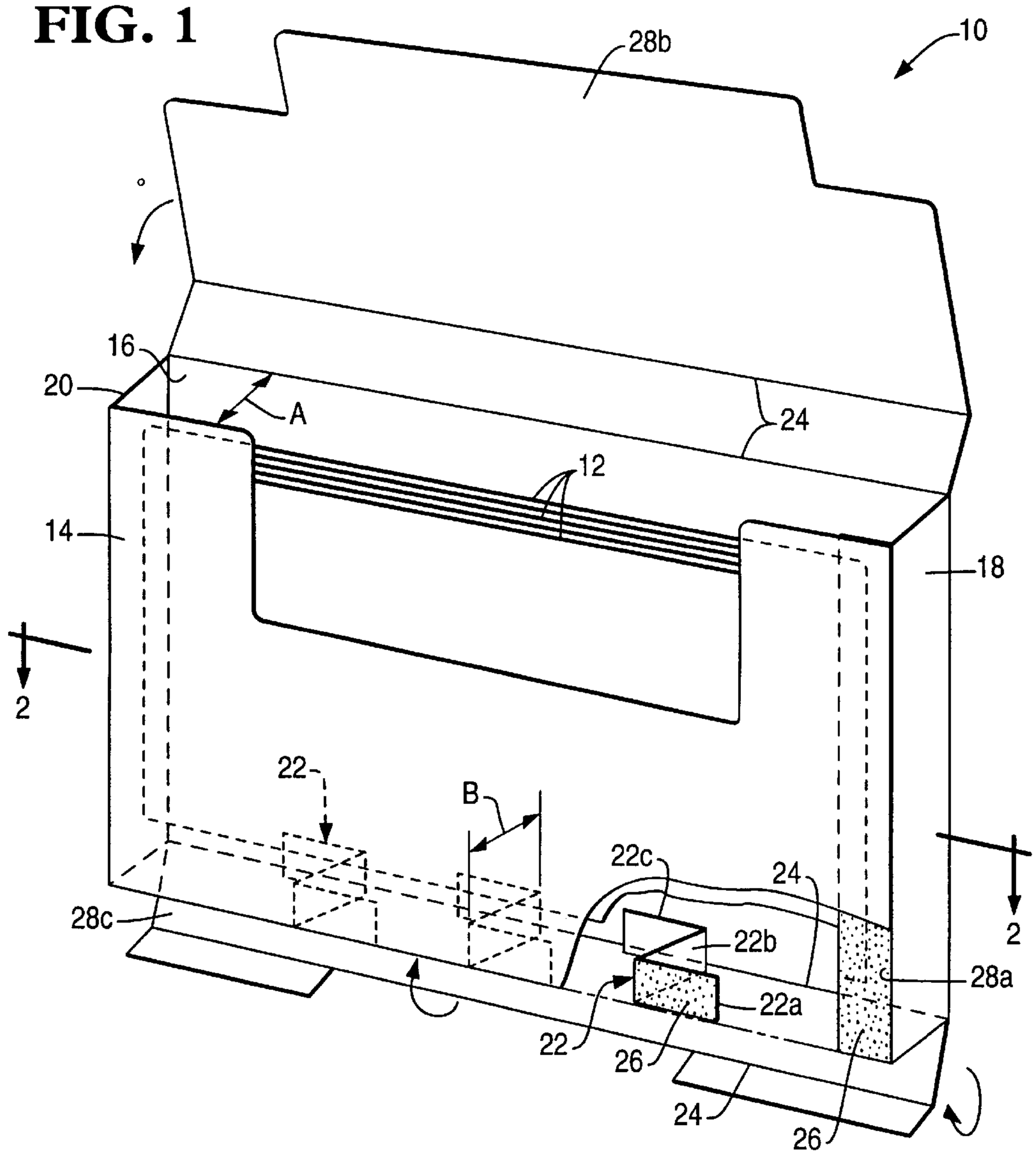


FIG. 1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28b
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A
24
12
14
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22c
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28c
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28a
22a
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26
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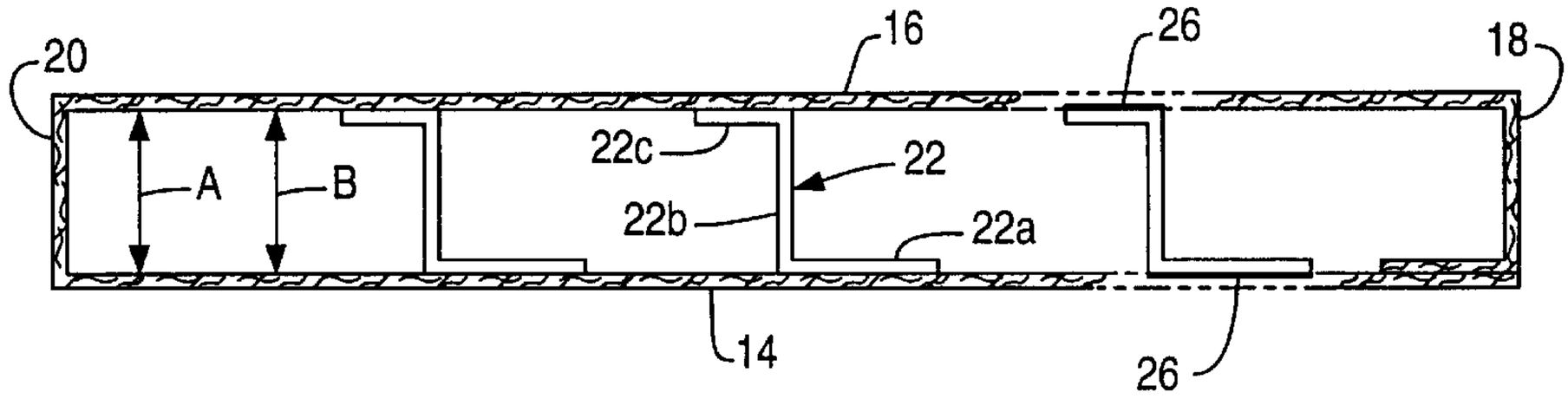
26
2

FIG. 2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16
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22c
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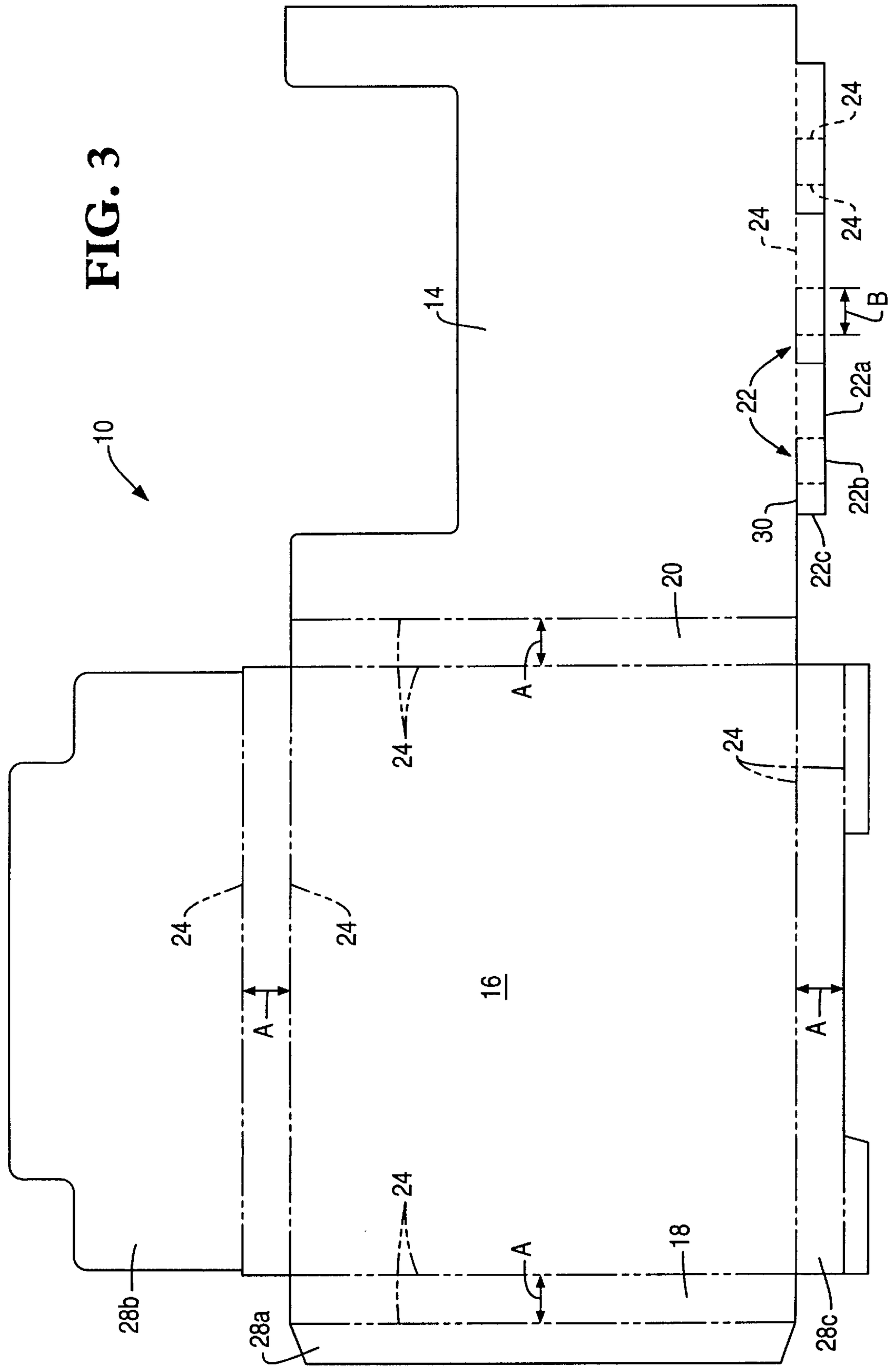
26

FIG. 3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22a
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18
28b
28a
28c

FIG. 4

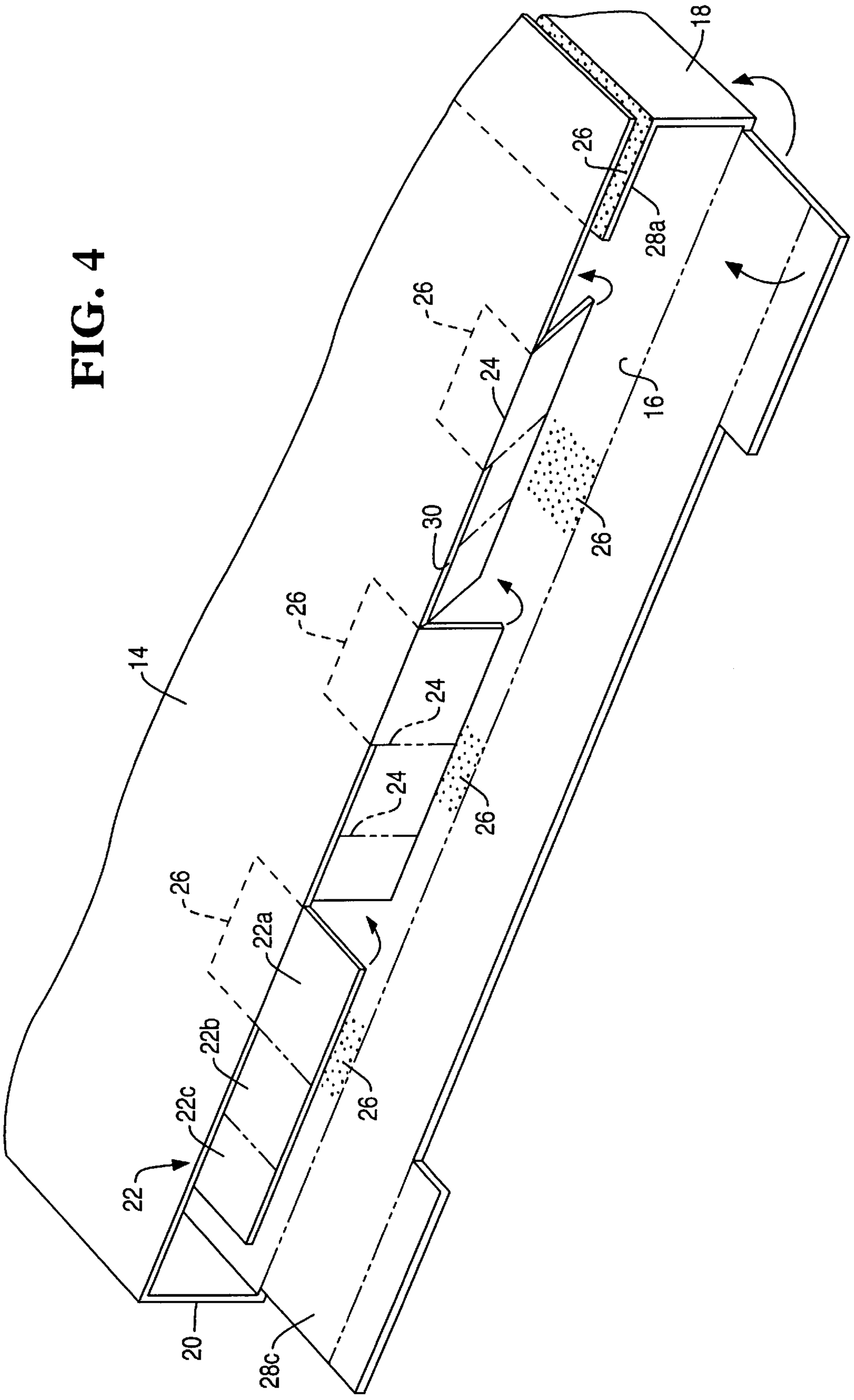


FIG. 5

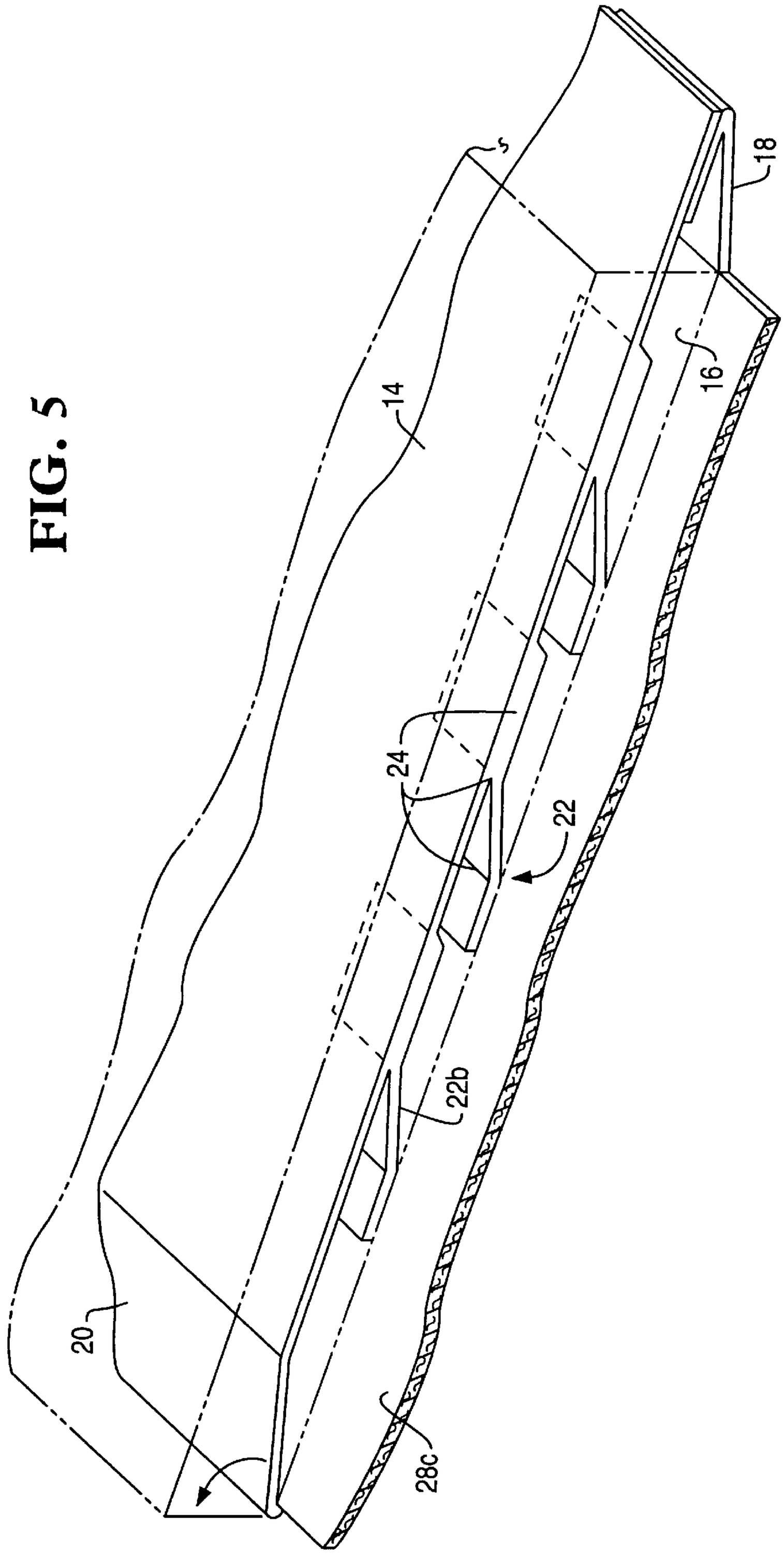


FIG. 6

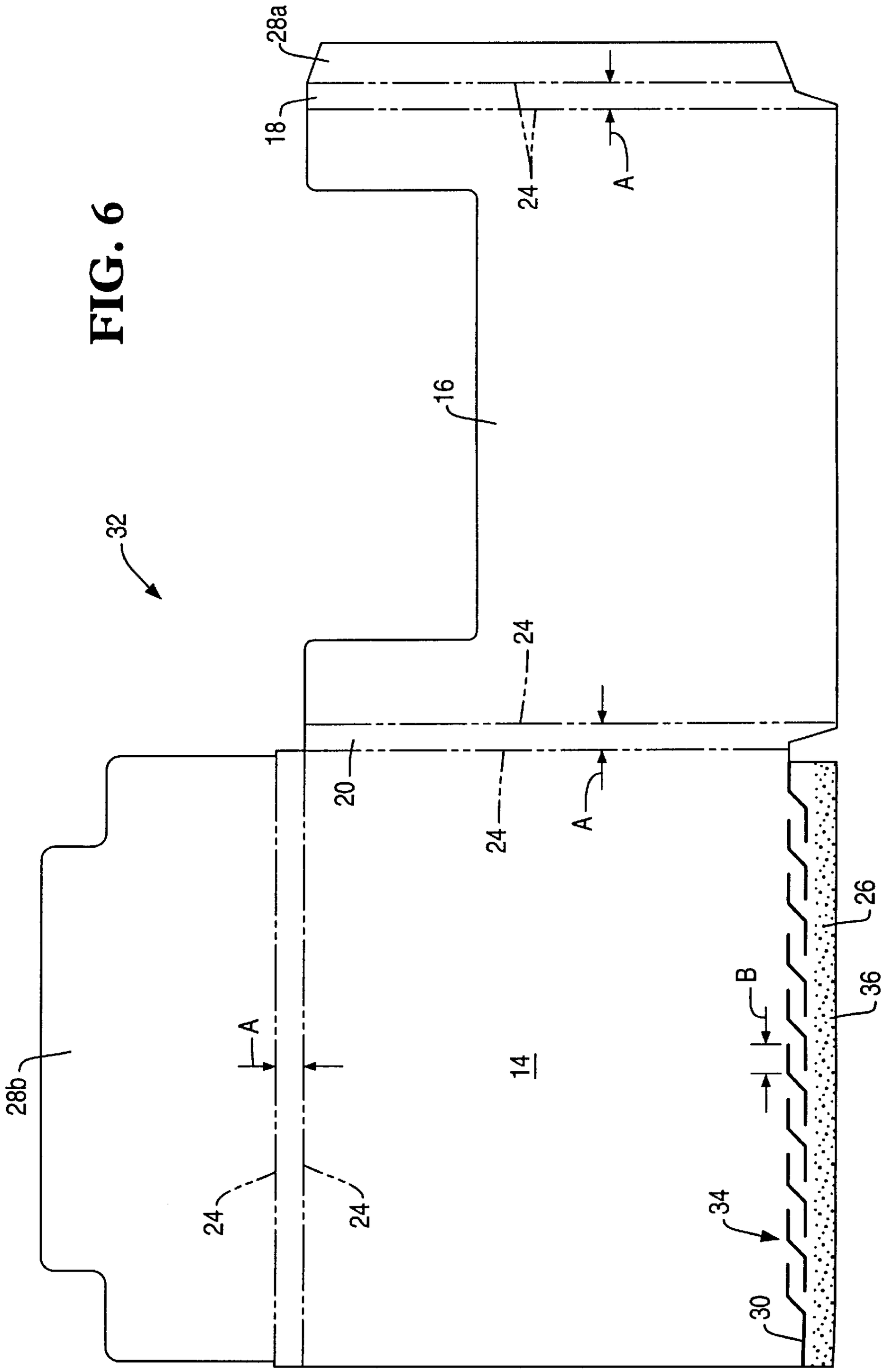


FIG. 7

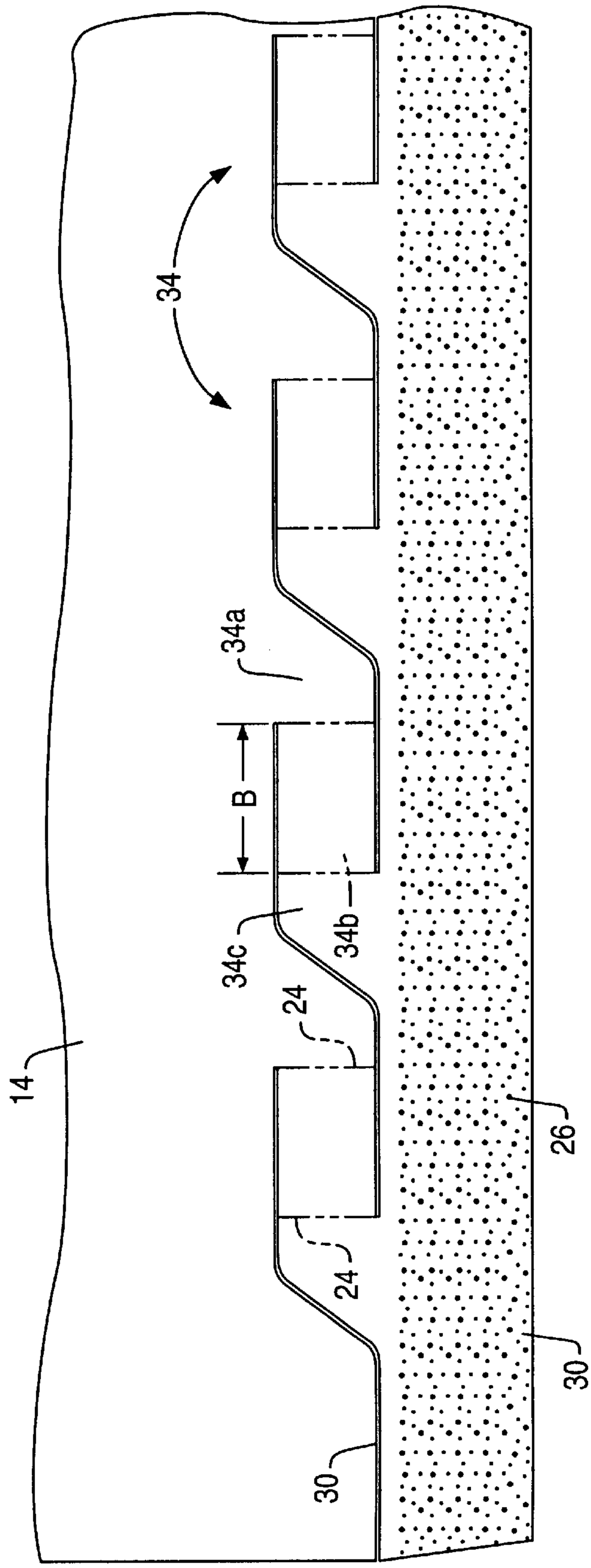
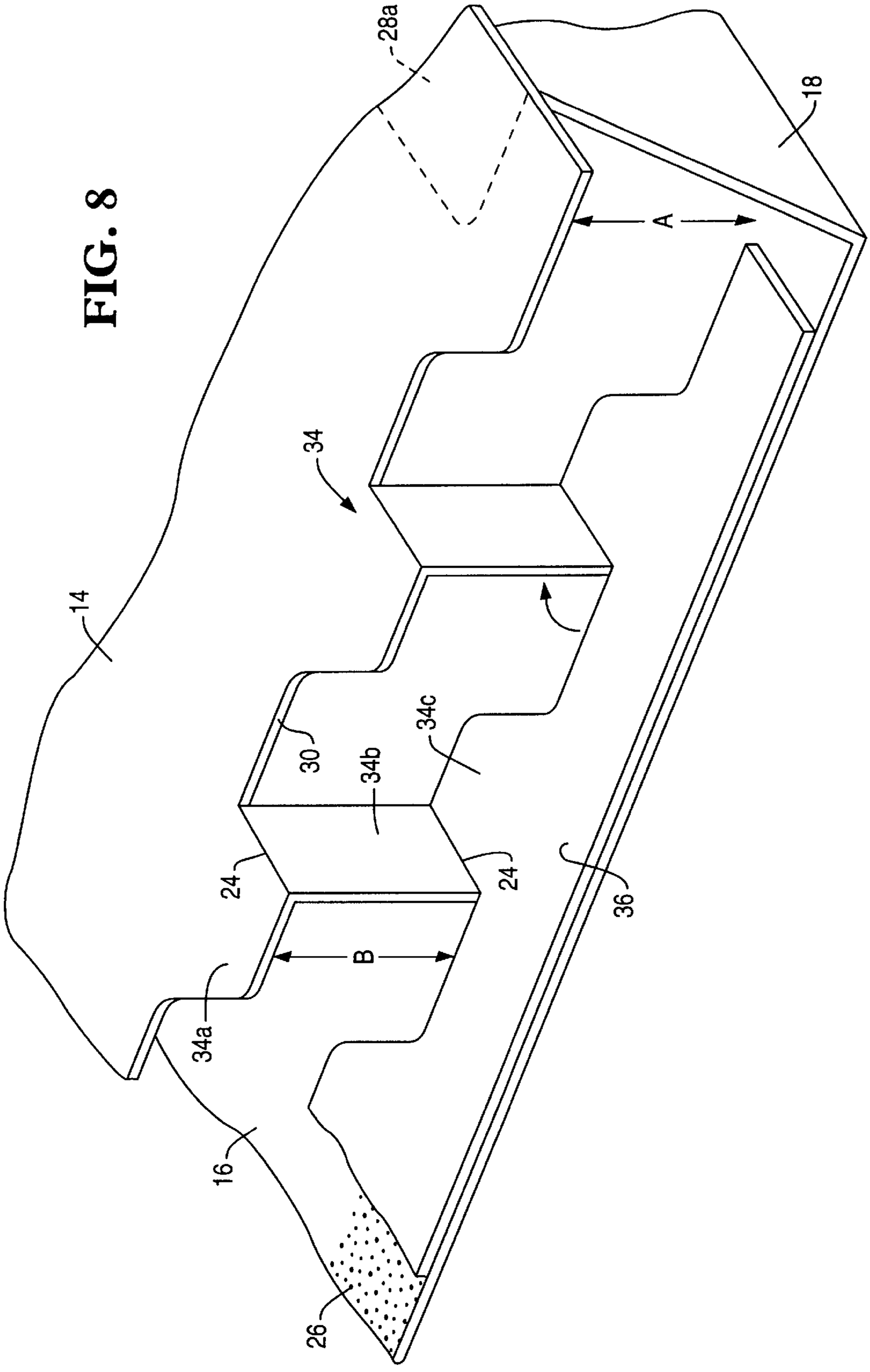


FIG. 8



EXPANDABLE RIB STORAGE POUCH

BACKGROUND OF THE INVENTION

The present invention relates generally to stationery products, and, more specifically, to storage pouches.

Pressure sensitive labels in rectangular sheet form are offered for sale in multi-sheet packs such as 25, 50, and 100, for example. The packaging container therefor may vary from a simple envelope type pouch to a two-piece box.

Packaging pouches offer simplicity in structure and manufacturing over boxes, and are more compact, easy to fill with the sheet articles, and therefore reduce cost.

Expandable folders having accordion sides are known for permitting selective increase in thickness of the folder for storing sheets stacked in varying thickness. However, accordion folders lack rigidity and are not desirable as a packaging container for multi-sheet article packs configured for display in a retail stationery establishment.

Accordingly, it is desired to provide an expandable pouch for packaging multi-sheet article packs in a relatively simple configuration initially flat and expandable into a rigid container.

BRIEF SUMMARY OF THE INVENTION

An expandable storage pouch includes four panels disposed integrally side by side in turn, and a plurality of hinges disposed in a row along a bottom end of a first one of the panels. Each hinge includes a proximal end joined to the first panel, an intermediate rib joined to the proximal end, and a distal end joined to the rib. The rib is severed from the first panel to permit expansion of the pouch, and rigidly separates the first panel from an opposite second panel.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention, in accordance with preferred and exemplary embodiments, together with further objects and advantages thereof, is more particularly described in the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. **1** is an isometric view of an expandable storage pouch having bottom hinges in accordance with an exemplary embodiment of the present invention.

FIG. **2** is a sectional view through the bottom of the pouch illustrated in FIG. **1** and taken along line **2**—**2** to illustrate a plurality of hinges therein in accordance with one embodiment of the present invention.

FIG. **3** is a plan view of the pouch illustrated in FIG. **1** in initial flat form prior to folding and assembly thereof.

FIG. **4** is an isometric view of the bottom end of the pouch illustrated in FIG. **1** being folded and assembled.

FIG. **5** is an isometric view like FIG. **4** of the assembled pouch being expanded at the hinges for receiving a pack of articles therein.

FIG. **6** is a plan view like FIG. **3** of the expandable pouch with expansion hinges in accordance with another embodiment of the present invention.

FIG. **7** is an enlarged view of a portion of the hinges illustrated in FIG. **6**.

FIG. **8** is an isometric view of a bottom portion of the assembled pouch illustrated in FIG. **6** with the hinges deployed for expanding the pouch.

DETAILED DESCRIPTION OF THE INVENTION

Illustrated open in FIG. **1** is an expandable packaging or storage pouch **10** in accordance with an exemplary embodiment of the present invention. The pouch is expandable to a narrow rectangular box form for storing therein one or more articles **12** in the exemplary form of pressure sensitive label sheets having a standard rectangular configuration of 8.5×11 inch (22×28 cm) for example. The sheet articles are individually thin but when packed in groups of 50 or 100 for example, have a collective thickness requiring a corresponding internal thickness or width A of the pouch.

In the exemplary embodiment illustrated in FIG. **1**, the pouch includes four flat and generally rectangular panels **14**,**16**,**18**,**20** disposed integrally side by side in turn in a unitary assembly expandable to a rectangular box configuration. A plurality of hinges **22** are disposed in a row along a bottom end of the first panel **14** for providing expansion capability of the pouch from an initially folded and flat form to an expanded box configuration, with the hinges also providing a bottom support for the articles **12** resting thereatop.

The hinges **22** are additionally shown in FIG. **2**, and each includes a proximal end **22***a* integrally joined to the first panel **14**. An intermediate leg or rib **22***b* of each hinge is integrally joined to a respective proximal end thereof, and is severed or die cut from the first panel **14**. A distal end **22***c* of each hinge is integrally joined to the corresponding rib **22***b* and is configured to adjoin a corresponding bottom end of the second panel **16** which is disposed generally opposite and parallel to the first panel **14**.

The first and second panels **14**,**16** may define front and back panels of the pouch as desired, and may include suitable graphics and printing thereon for identifying the articles stored in the pouch. The third and fourth panels **18**,**20** define side panels integrally joined to the first and second panels, and may also contain printing as desired. The side panels preferably have the same or common width A, and control the resulting width of the expanded pouch.

Correspondingly, each of the hinge ribs **22***b* has the same or common length B which is equal to the width A of the side panels for bridging and supporting the first and second panels **14**,**16** at the bottom ends thereof. The side panels are preferably narrower than the first and second panels to provide a pouch having a suitable thickness for packaging a desired number of the sheet articles **12** therein.

The pouch may be formed of any suitable material such as plastic or heavyweight paper, with the several panels being flat and rectangular. The side panels are relatively rigid along their widths for providing structural rigidity to the sides of the pouch, and the hinge ribs **22***b* provide structural rigidity at the bottom of the pouch. The top of the pouch is open for receiving and dispensing the articles therethrough as desired.

As shown in FIGS. **1** and **3**, the ribs **22***b* are preferably rectangular in configuration and extend parallel or horizontal to the bottom ends of the first and second panels **14**,**16**.

As shown in FIG. **3**, the pouch **10** may be initially formed from a single, unitary sheet of material with a corresponding die cut outer profile which allows folding of the different portions to effect the resulting rectangular box illustrated in FIG. **1**. Accordingly, the pouch includes various fold lines **24**, shown in phantom line in FIG. **3**, at suitable locations for allowing the pouch to be folded or bent into its final configuration, with the fold lines then defining corresponding corners or edges thereof. The fold lines **24** are conventional in configuration and are formed by scoring or indenting the pouch material along the required lines. The initial pouch is flat, but is readily bent into three dimensional configuration by folding along the corresponding lines.

As shown in FIG. **3**, the hinges **22** are preferably integrally formed in the initial pouch sheet, with each of the corresponding ribs **22***b* being defined between a pair of vertical fold lines **24** for permitting bending therealong between the proximal and distal ends **22***a,c*.

The rectangular ribs **22***b* are parallel to each other in a single line as illustrated in FIG. **3**, and are also parallel to the side panels **18,20** when assembled and expanded as shown in FIG. **2**.

During the assembly process, an adhesive **26** is disposed on the hinge distal ends **22***c* for fixedly bonding the distal ends to the second panel **16**, with the hinge proximal ends **22***a* being fixedly joined to the first panel **14** at their corresponding fold lines.

As shown in FIG. **2**, the first and second panels **14,16** in the assembled pouch are parallel to each other, with the ribs **22***b* extending obliquely therebetween, and preferably perpendicular, for maximizing the structural rigidity at the bottom end of the pouch between the opposite first and second panels **14,16**.

FIG. **4** illustrates assembly of the initially flat pouch **10** illustrated in FIG. **3** by folding along the respective fold lines to position the first and second panels **14,16** opposite to each other, and the side panels **18,20** opposite to each other in a generally rectangular configuration. The third panel **18** preferably includes an integral side flap **28***a* having the adhesive **26** thereon for fixedly bonding the side panel **18** along a corresponding edge of the first panel **14**. The respective hinge distal ends **22***c* are adhesively bonded to the inner surface of the second panel **16** and complete the bridges therebetween.

As shown in FIG. **5**, the ribs **22***b* are positionable at a collapsed position generally coplanar with both the first and second panels **14,16** when the two panels are folded flat against each other. And, the ribs **22***b* are also positionable to an expanded position, shown in phantom in FIG. **5** and in solid line in FIG. **2**, extending perpendicularly between the first and second panels **14,16**.

The respective hinges **22** are therefore Z-shaped in their expanded position, with the proximal ends **22***a* being fixedly joined to the first panel **14**, and the distal ends **22***c* being fixedly joined to the opposite second panel **16**. The hinges therefore allow the assembled pouch to remain substantially flat after initial assembly, with the hinges being collapsed for providing a compact and flat configuration of the pouch for its own storage in corresponding boxes therefor.

The individual collapsed pouches may then be expanded for use by simply tilting the hinges **22** and side panels by skewing the pouch to provide a rectangular internal pocket within the pouch in which the articles **12** may be inserted as shown in FIG. **1**. The hinge ribs **22***b* bridge the two panels **14,16** along the bottom ends thereof to provide structural integrity in the expanded box-pouch **10**, and also vertically support the articles **12** resting thereatop.

As also shown in FIG. **1**, the pouch may also include a top flap **28***b* extending integrally outwardly from the top of the second panel **16** and configured with a pair of the fold lines **24** for closing the top of the pouch to secure the articles therein. The top flap **28***b* may have any conventional configuration, and may join the first panel **14** using a suitable adhesive, or friction overlap therewith as desired.

Furthermore, the pouch **10** illustrated in FIG. **1** may also include a bottom flap **28***c* extending integrally outwardly from the bottom of the second panel **16**, and similarly has a pair of the fold lines **24** for closing the bottom of the pouch and covering the hinges **22** disposed therein. The bottom flap

is optional and may be joined to the first panel **14** by corresponding tabs or adhesive as desired. The resulting pouch **10** illustrated in FIG. **1** is a unitary or one-piece assembly of components formed from a single sheet of material readily assembled with simple adhesive **26** at the side flap **28***a* and at the respective hinges **22**.

In the preferred embodiment illustrated in FIGS. **3** and **4**, the hinges **22** are discrete components which are readily die cut at the bottom of the first panel **14**. The ribs **22***b* and distal ends **22***d* are separated from the first panel **14** by corresponding die cuts **30**, with the proximal ends **22***a* remaining integrally attached to the first panel **14** at the corresponding fold lines **24**. The hinge distal ends **22***c* are separated from each other and individually adhesively bonded to the inner surface of the opposite second panel **16** as illustrated in FIG. **4**.

The corresponding fold lines **24** joining the hinge proximal ends **22***a* to the first panel **14** provide an integral joint therewith and permit the initially flat hinges to be reverse bent **180**E about the fold lines, and adhesively bonded to the inner surface of the first panel **14**.

Correspondingly, each of the hinge distal ends **22***c* is adhesively bonded to the inner surface of the opposite second panel **16** as shown in FIG. **5**. The resulting hinges **22** are therefore flush with the bottom ends of the first and second panels **14,16** as well as the bottom ends of the side panels **18,20**. And, the fold lines **24** at the opposite ends of the ribs **22***b* allow the pouch to remain collapsed, yet readily permit expansion of the pouch by pivoting thereat to position the ribs perpendicularly between the opposite panels as illustrated in FIGS. **1** and **2**.

The resulting pouch **10** illustrated in FIGS. **1–5** is relatively simple in construction, readily assembled using the adhesive **26** solely at the side flap **28***a* and the hinges, and is readily expandable for providing a suitable interior pocket for packaging one or more of the articles therein. The hinges provide structural rigidity for the bottom of the pouch comparable to that provided by the relatively rigid side panels **18,20**.

FIGS. **6–8** illustrate a pouch, designated **32**, in accordance with another embodiment of the present invention which is similar to the first embodiment, but with a modified form of the hinges, designated **34**. Since the hinges in either embodiment may be defined in either of the first and second panels **14,16**, which correspondingly may define either front or back sides of the resulting pouch as desired, the location of the first and second panels **14,16** in the second embodiment is reversed from that illustrated in the first embodiment, with the modified hinges **34** being disposed at the bottom of the first panel **14**. Note that similar reference numerals are used for similar components in the two embodiments.

Like the first hinges **22** illustrated in the first embodiment, the corresponding hinges **34** also include a respective proximal end **34***a* integrally formed with the first panel **14**, a rib **34***b* severed from the first panel by a die cut **30** and integrally joined to the proximal end **34***a*by a fold line **24**, and a distal end **34***c* also severed from the first panel by a continuation of the die cut **30**, and integrally joined to the rib **34***b* by a corresponding fold line **24**.

In this embodiment, the hinges **34** are integrated together, and the distal ends **34***c* are joined together by being integrally joined to a common border **36**. The hinges and border are initially part of the first panel **14** and are distinguished therefrom by the corresponding die cuts **30** having the general S-shape illustrated initially in FIGS. **6** and **7**. The common border **36** is adhesively bonded to the inner surface

of the opposing second panel **16** at the bottom end thereof using the adhesive **26** during the assembly process.

As best shown in FIG. **8**, each of the hinge proximal ends **34***a* is uninterrupted without fold line at the first panel **14** and is coextensive therewith. Due to the S-profile of the die cuts **30**, the proximal ends **34***a* are correspondingly tapered in ramp configurations. The proximal ends **34***a* at all times remain coplanar with the first panel **14** both in the collapsed and expanded positions.

Correspondingly, the hinge distal ends **34***c* as illustrated in FIG. **8** remain at all times coplanar with the border **36** bonded atop the second panel **16**, and are similarly tapered like the proximal ends **34***a* in a ramp profile. The ribs **34***b* are preferably rectangular and extend from their collapsed position sandwiched between the first and second panels **14,16** to their expanded position perpendicular between the two panels as illustrated in FIG. **8**.

In this embodiment, the hinge proximal ends **34***a* are not folded under the first panel **14** but remain extended and coplanar therewith. Accordingly, the hinges **34** are correspondingly vertical offset between the bottom ends of the first and second panels **14,16**. The common border **36** is bonded to the bottom end of the second panel **16**, with the hinges **34** extending inboard or upwardly away from the border **36** to position the hinges along the bottom edge of the first panel **14**. The hinges **34** are therefore visible from the first panel **14**, but not visible from the second panel **16**. The second panel **16** may therefore be configured as a front panel of the pouch, with the first panel **14** being configured as the back of the pouch for hiding from view the exposed hinges **34**.

In both embodiments disclosed above, the corresponding ribs extend perpendicularly between the first and second panels **14,16** and provide structural rigidity at the bottom of the pouch for maintaining the box configuration thereof, while also providing a support upon which the articles **12** are rested.

The expandable pouches disclosed above are simple in construction, with each starting as a unitary single sheet of material having an outer profile cut to shape, with the integral hinges being identified by corresponding die cuts and fold lines. In this form, the pouches may be shipped and stored flat in bulk.

Assembly of the pouches is easily accomplished by simply folding about the respective fold lines and selectively applying the adhesive to secure the panels together, and securing the hinges to the opposing panel. The so assembled pouches may still remain flat in their collapsed position for decreasing bulk during storage. When required, the pouches may then be easily expanded to position the corresponding ribs perpendicularly between the opposing panels, with the pouches then being filled with one or more of the articles. The top flap, and the optional bottom flap if used, may then be closed, with the filled packages then being available for purchase by consumers.

While there have been described herein what are considered to be preferred and exemplary embodiments of the present invention, other modifications of the invention shall be apparent to those skilled in the art from the teachings herein, and it is, therefore, desired to be secured in the appended claims all such modifications as fall within the true spirit and scope of the invention.

Accordingly, what is desired to be secured by Letters Patent of the United States is the invention as defined and differentiated in the following claims in which I claim:

1. An expandable storage pouch comprising:

four panels disposed integrally side by side in turn;

a plurality of hinges disposed in a row along a bottom end of a first one of said panels; and

each hinge having a proximal end integrally joined to said first panel, an intermediate rib integrally joined to said proximal end and severed from said first panel, and a distal end integrally joined to said rib and configured to adjoin a second one of said panels.

2. A pouch according to claim **1** wherein third and fourth ones of said four panels define side panels integrally joined to said first and second panels, and each having a width equal to a length of said ribs for bridging said first and second panels at said bottom ends thereof.

3. A pouch according to claim **2** wherein said ribs extend parallel to said bottom ends of said first and second panels.

4. A pouch according to claim **3** wherein said ribs are rectangular.

5. A pouch according to claim **4** wherein each of said ribs is defined between a pair of fold lines for permitting bending therealong between said proximal and distal ends.

6. A pouch according to claim **5** wherein said ribs are parallel to each other and to said side panels.

7. A pouch according to claim **6** further comprising an adhesive disposed on said hinge distal ends for bonding said distal ends to said second panel.

8. A pouch according to claim **7** wherein said first and second panels are parallel to each, with said ribs extending obliquely therebetween.

9. A pouch according to claim **8** wherein said ribs are positionable between a collapsed position generally coplanar with said first panel, and an expanded position extending perpendicularly between said first and second panels.

10. A pouch according to claim **9** wherein said hinges are Z-shaped in said expanded position.

11. A pouch according to claim **9** wherein said hinges are discrete, and said distal ends thereof are separated from each other.

12. A pouch according to claim **11** wherein each of said hinge proximal ends includes a fold line at said first panel.

13. A pouch according to claim **12** wherein each of said hinge proximal ends is reverse bent about said fold line thereat, and adhesively bonded to said first panel.

14. A pouch according to claim **13** wherein each of said hinge distal ends is adhesively bonded to said second panel.

15. A pouch according to claim **14** wherein said hinges are flush with said bottom ends of said first and second panels.

16. A pouch according to claim **9** wherein said hinges are integrated, and said distal ends thereof are joined together.

17. A pouch according to claim **16** wherein each of said hinge proximal ends is uninterrupted at said first panel.

18. A pouch according to claim **17** wherein each of said hinge proximal ends is coplanar with said first panel.

19. A pouch according to claim **18** wherein said hinge distal ends are integrally joined to a common border, and said border is adhesively bonded to said second panel.

20. A pouch according to claim **19** wherein said hinges are offset between said bottom ends of said first and second panels.

* * * * *